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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,830	04/24/2006	Michael J. Gorczynski	00940-03	9069

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UNIVERSITY OF VIRGINIA PATENT FOUNDATION
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EXAMINER	
LOEWE, SUN JAE Y	
ART UNIT	PAPER NUMBER
1626	

MAIL DATE	DELIVERY MODE
12/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,830	GORCZYNSKI ET AL.	
	Examiner	Art Unit	
	Sun Jae Y. Loewe	1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *7 and 11-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-10 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12-3-2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-21 are pending in the instant application.

Election/Restrictions

2. Applicant's election with traverse of Group I, and compound 20 (X is O, R_1 is H, R_2 is Cl and R_3 is Cl.) in the reply filed on November 12, 2007 is acknowledged. The traversal is on the ground(s):

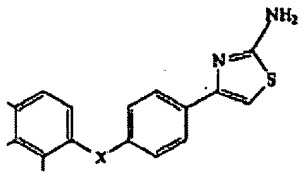
a) Examiner has mistakenly separated a compound and its use ...

Applicants assert that Groups I and VII, contrary to the assertion of the Examiner, do relate to a single inventive concept when compound 20 is elected.

The claims encompass subject matter beyond the single elected species of compound 20. The technical feature linking the full scope of the subject matter encompassed by the claims is a core structure that is taught by the prior art (restriction requirement, page 3). See also below.

b) Applicants note that the structure of Simons recited by the Examiner does not teach or contemplate compound 20 of the present application, and thus does not teach the technical feature linking the subject matter of the Groups. Additionally, the structure

The technical feature linking the full scope of subject matter encompassed by the claims is



. It is noted that variables, for example X, do not contribute to the special technical feature as these are not shared by all compounds encompassed by the Markush group.

The prior art compound of Simmons et al. teaches the technical feature of the instant claims (ie. irregardless of the nature of variables X, R^1-R^3). It is noted that the methyl substitution on the thiazole ring is not a patentably distinct feature.

Moreover, during the search and examination of the elected invention (see Section 3), prior art was found that anticipates the claimed Markush structure I (see Kawamatsu et al.).

c) . the search for one group of Groups I and VII, would

be coextensive with the other, does not require independent searches, and furthermore does not entail a burdensome search.

Applicant is reminded that the requirements set forth in MPEP § 800, which is intended for national applications filed under 35 USC 111(a) (see MPEP § 801), does not apply for the instant case. The propriety of restriction is determined by MPEP § 1800.

The arguments are not found persuasive for the reasons discussed above. The requirement is still deemed proper and is therefore made FINAL.

3. The search and examination of claims 1-6, 8-10 and 21 was performed for the elected species. MPEP 1893.03(d) states that when all of the claims drawn to the elected invention are allowable (i.e., meet the requirements of 35 U.S.C. 101, 102, 103 and 112), the nonelected invention(s) should be considered for rejoinder. The elected invention (ie. compound 20) was not allowable under 35 U.S.C 112 (see below sections 8-14). Thus, the following nonelected subject matter:

a) Non-elected species encompassed by claims 1-6, 8-10, 21 and

b) Claims 7 and 11-20

not rejoined for the present examination.

5. Claims 7 and 11-20 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected subject matter. Applicant timely traversed the restriction in the response dated November 12, 2007.

Information Disclosure Statement

6. The information disclosure statements submitted on December 3, 2007 was in compliance with the provisions of 37 CFR 1.97 and 37 CFR 1.98. The IDS was considered. A signed copy of form 1449 is enclosed herewith.

Claim Objections

7. Claims 1-6, 8-10 and 21 objected to for containing non-elected subject matter.

8. Claims 8 and 9 objected to for being essential duplicates of claims 2 and 3, respectively. Appropriate correction is requested.

9. Claim 10 objected to for being a duplicate of claim 9. Appropriate correction is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-6, 8-10 and 21 rejected under 35 U.S.C. 112, first paragraph. The specification is *not enabling* for making/using the elected compound (and pharmaceutical compositions thereof) for the intended use claimed: ie. anti-cancer agent.

The standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or

unreasonable? That standard is still the one to be applied. *In re Wands*, 858 F.2d 731, 737, 8USPQ2s 1400, 1404 (Fed. Cir. 1988). MPEP 2164.01(a) states "There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is undue". The factors are applied below to the instant claims.

The breadth of the claims
The claims are drawn to the elected compound, which has the intended use of anti-cancer agent (ie. intended use encompasses all types of cancer).

The nature of the invention
Support for the claimed intended use is the activity of the instantly elected compound shown by human breast cancer cell line testing (ie. in vitro activity).

The state of the prior art/level of ordinary skill/level of predictability
The level of predictability for the treatment of cancer is low. See below:

i) Anti-cancer drug research begins with in vitro evaluation with specific cancer cell cultures (Zips et al., p. 2 - Figure 1, page 3 - 1st paragraph). In vitro success does not necessarily translate to in vivo effect. For example, artificial culture conditions may not well represent the situation in vivo (Zips et al., p. 3, 2nd column, 2nd paragraph).
ii) Not all tumor cell lines show the same magnitude of response to anticancer agents; the underlying reasons for intertumoral heterogeneity are poorly understood (Zips et al., p.2, 2nd column, 1st paragraph).
iii) To cure a tumor, it is necessary to inactivate all clonogenic cells either by cell kill or by inducing a permanent state of dormancy (Zips et al., p.2, 1st column, 2nd paragraph); drugs like EGFR inhibitors (i.e. a protein kinase inhibitor) may inhibit proliferation without pronounced cell kill, i.e. clonogens proliferate more slowly but are not inactivated (Zips et al., p.3, column 1, 4th paragraph).
iv) Success in treating one type of cancer (eg. breast cancer) does not translate to success for treating a different type of cancer (eg. lung cancer).

The amount of direction provided by the inventor/existence of working examples
In vitro activity of the instantly elected compound as measured by human breast cancer cell line testing.

The quantity of experimentation needed to make or use the invention

The state of the art for treatment of cancer is unpredictable. Art-recognized correlation does not currently exist between in vitro cell line activity and in vivo treatment of cancer. Moreover, the ability of an anti-cancer agent to treat one type of cancer does extend to an ability of the same compound to treat all types of cancer. In the absence of further guidance, particularly in view of the high degree of unpredictability, one of ordinary skill is not enabled to use the instantly elected compound as an anti-cancer agent. The amount of experimentation is undue.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 2-4 and 8-10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are drawn to "compound" and "pharmaceutically acceptable salts thereof". It is unclear whether the invention is drawn to a *mixture* of the separate components (eg. compound and salt), or whether the components are *alternatives* within one claim. For the purpose of examination, the claims are interpreted to encompass alternatives and not mixtures.

Appropriate clarification/correction is requested.

12. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is drawn to "**A compound having the general structural formula of structure I** ". It is unclear what the terms "**having the general structural formula**" entail: ie. it may be interpreted to allow for only

compounds that fit the structural limitations defined by structure I, or alternatively to allow for compounds that are structurally similar yet do not fall within the genus. It is suggested that the terms "having the general structural formula" be deleted from the claims to overcome this ground of rejection.

13. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

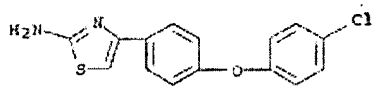
The claim is drawn to "wherein said compound is selected from the group consisting of substituted 4-aryloxy and 4-arylsulfanyl-phenyl-2-aminothiazoles". The terms "substituted 4-aryloxy" and "4-arylsulfanyl-phenyl-2-aminothiazoles" are not defined. Structural boundaries intended to be encompassed by these terms cannot be ascertained. Appropriate correction is requested.

14. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Variables X and R1-R3 are not defined. Thus, structural boundaries for the compounds of structure I cannot be ascertained. Appropriate correction is requested.

Allowable Subject Matter

15. Compound 20 is neither anticipated nor made obvious by the prior art. The closest reference is the compound of Kawamatsu et al.



. The reference does not teach or suggest additional halo substitutions to the phenyl ring.

Conclusion

16. No claims allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sun Jae Y. Loewe whose telephone number is (571) 272-9074. The examiner can normally be reached on M-F 7:30-5:00 Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571)272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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